

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 18, 20, 26-29, 31-35, 37-41, 43 and 44 are pending, with claims 1, 18, 35, 37, 38 and 43 amended, and claims 36 and 42 cancelled without prejudice or disclaimer, by the present amendment. Claims 1, 18 and 35 are independent.

In the Official Action, claim 42 was rejected under 35 U.S.C. § 112, second paragraph; claims 1, 18, 20, 26-29 and 31-42 were rejected under 35 U.S.C. § 102(a)/102(e) as being anticipated by Tarsa (U.S. Patent No. 6,614,056); and/or claims 1, 18, 20, 26-29 and 31-42 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Tarsa; and claims 43 and 44 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tarsa in view of Katayama (U.S. Patent No. 6,903,374).

Claims 1, 18, 35, 37, 38 and 43 are amended to more clearly describe and distinctly claim Applicant's invention. Support for this amendment is found in Applicant originally filed specification.¹ No new matter is added.

Briefly recapitulating, amended claim 1 is directed to

An LED, comprising:

a first gallium nitride layer;

a first electrode at one portion of and above the first gallium nitride layer;

an active layer above the first gallium nitride layer;

a second gallium nitride layer above the active layer;

¹ Specification, Fig. 8.

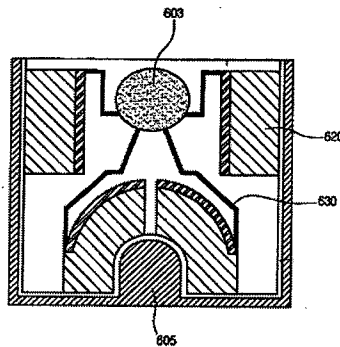
a plurality of transparent electrodes on the second gallium nitride layer, wherein one of the plurality of transparent electrodes is electrically connected to, and is physically isolated from, another of the plurality of transparent electrodes;

a second electrode above the second gallium nitride layer; and

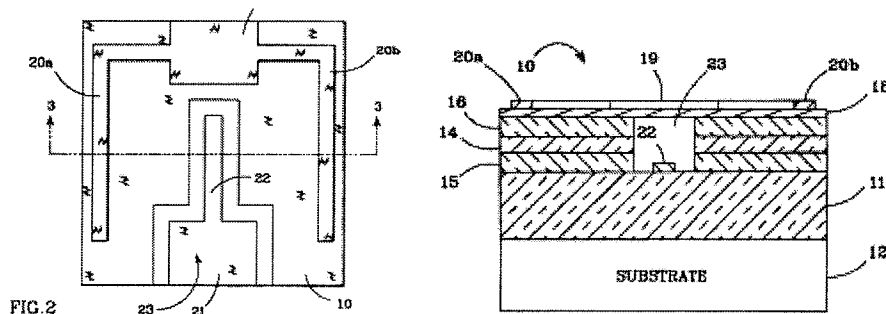
a plurality of connection units directly in contact with the second gallium nitride layer, each connection unit electrically connecting a respective one of the plurality of transparent electrodes with the second electrode.

Applicant's Fig. 8 is reproduced below. Here, connection units 630 are directly in contact with the second gallium nitride layer (white area). Connection units 630 connect physically isolated transparent electrodes 620 with the second electrode 603.

Fig. 8



Tarsa describes an LED having a core with epitaxially grown p- and n-type layers, and an epitaxially grown active layer between p- and n-type layers. Tarsa's Figs. 2-3 are reproduced below.

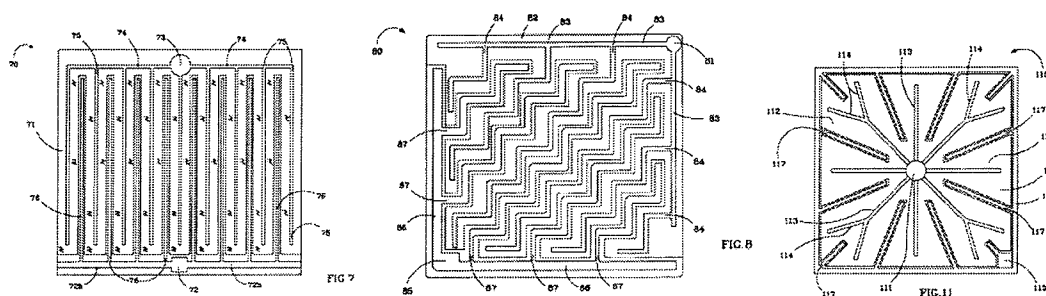


Tarsa's Figs. 2-3 show square LED 10 having a conductive layer 11, denoted first spreader layer, sandwiched between a substrate 12 and an LED core that includes an epitaxially grown active

layer 14 sandwiched between epitaxially grown conductive layers 15 and 16. Conductive layer 15 is the same type, n or p, as first spreader 11, while conductive layer 16 is of the other type, n or p. A current spreading layer 18 (second spreader layer) is deposited on conductive layer 16 to facilitate current spreading across conductive layer 16 and into the active layer 14. The second spreader 18 may also be formed of a transparent or semitransparent conducting material. A second contact 19 having two second conductive fingers 20a and 20b, is deposited on the second spreader 18. The second contact and fingers extend adjacent to three of the conductive layer's edges, forming a U-shaped path that stops short of the edge opposite the contact 19. The outer boundary of fingers 20a and 20b can extend up to the edges of the conductive layer 16 or can be back somewhat from the edges such that a small area of the second spreader 18 shows between the fingers 20a and 20b.

However, Tarsa's second conductive fingers 20a and 20b are not in direct contact with conductive layer 16. That is, assuming arguendo that Tarsa's conductive layer 16 is equivalent to Applicant's claimed second gallium nitride layer, Tarsa's second conductive fingers 20a and 20b are separated from conductive layer 16 by second spreader 18. Thus, Figs. 2-3 of Tarsa do not disclose or suggest "a plurality of connection units directly in contact with the second gallium nitride layer, each connection unit electrically connecting a respective one of the plurality of transparent electrodes with the second electrode."

Tarsa's Figs. 7-8 and 11 are reproduced below.

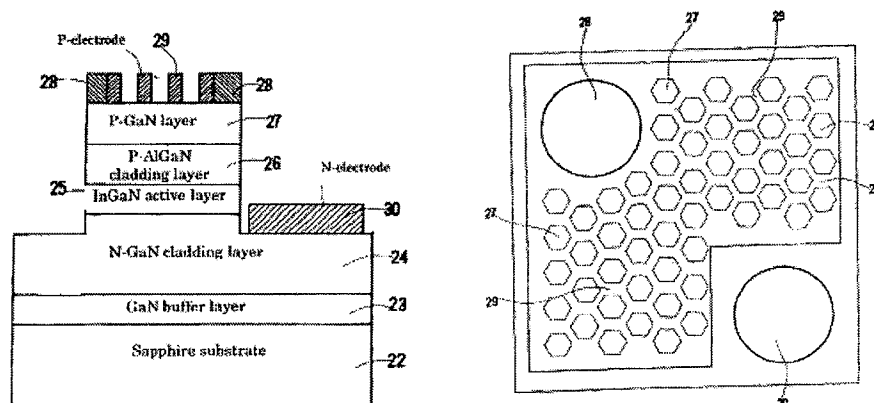


Here, Tarsa's fingers make a variety of patterns. However, as in Tarsa's Figs. 2-3, Figs. 7-8 and 11 do not disclose or suggest "a plurality of connection units directly in contact with the second gallium nitride layer, each connection unit electrically connecting a respective one of the plurality of transparent electrodes with the second electrode."

For at least the preceding reasons, Applicant submits that amended claim 1 is not anticipated by Tarsa. Similarly, amended claim 18 is not anticipated by Tarsa.

Indeed, MPEP § 2131 notes that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See also MPEP § 2131.02. "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Because Tarsa does not disclose or suggest all of the features recited in claims 1 and 18, Tarsa does not anticipate the invention recited in claims 1 and 18, and all claims depending therefrom.

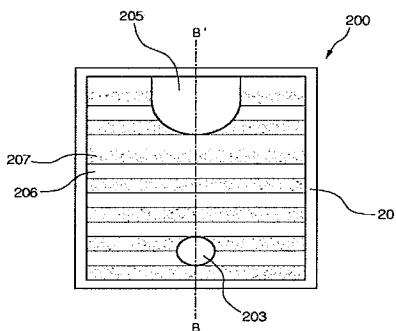
Applicant has considered Katayama and submits that Katayama does not cure the above-identified deficiencies of Tarsa. Figs. 6-7 of Katayama are reproduced below.



Katayama's Figs. 6-7 shows the following layers formed on a sapphire substrate 22: a GaN buffer layer 23, an n-type GaN cladding layer 24, an InGaN active layer 25, a p-type AlGaIn

cladding layer 26, a p-type GaN layer 27, a bonding electrode 28, a thin-film metal electrode 29, and a n-type metal electrode 30. However, Katayama fails to disclose any transparent electrodes, let alone a) a plurality of transparent electrodes on the second gallium nitride layer, wherein one of the plurality of transparent electrodes is electrically connected to, and is physically isolated from, another of the plurality of transparent electrodes, or b) a plurality of connection units directly in contact with the second gallium nitride layer, each connection unit electrically connecting a respective one of the plurality of transparent electrodes with the second electrode.

Turning now to claim 35, independent claim 35 has been amended to recite features related to those of previously pending claims 36 and 42. Regarding the rejection under 35 U.S.C. § 112, second paragraph, Applicant's Fig. 5 is reproduced below.



Applicant's Fig. 5 shows at least two transparent electrodes (e.g., 206, 207) that are perpendicular to a line (B-B') passing through both a center of the first electrode (205) and a center of the second electrode (203). Applicant submits that the rejection under 35 U.S.C. § 112, second paragraph, is moot in view of the current rejection. Furthermore, Applicant submits that Tarsa and Katayama each do not disclose or suggest, individually or in combination, a) a plurality of transparent electrodes directly on a P-type layer, wherein one of the plurality of transparent electrodes is physically isolated from another of the plurality of transparent electrodes; and b) at least two of the plurality of transparent electrodes are perpendicular to a line

passing through both a center of the first electrode and a center of the second electrode in a plan view. Accordingly, amended claim 35 patentably defines over Tarsa and Katayama.

CONCLUSION

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Michael E. Monaco, Reg. No. 52,041, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§ 1.16 or 1.147; particularly, extension of time fees.

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Respectfully submitted,

By 

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